

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

**RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)**

Migration of Contaminated Groundwater Under Control

Facility Name: Burlington Northern and Santa Fe Railway Company (BNSF) Hobson Yard
Facility Address: Lincoln, NE
Facility EPA ID #: NED000822767

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

☒ If yes - check here and continue with #2 below.

☐ If no - re-evaluate existing data, or

☐ if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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_____ If unknown - skip to #8 and enter "IN" status code.

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¹“Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate “levels” (appropriate for the protection of the groundwater resource and its beneficial uses).

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✓ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the “existing area of groundwater contamination”²).

If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Groundwater flow direction at the site is toward the east and northeast. The site is bounded on the north by the North Ditch, a man made and ephemeral surface water conduit, and on the east by Salt Creek. Groundwater sampling data collected to date indicates groundwater contamination extends to the North Ditch and extends slightly north of the ditch in one location but long-term monitoring of off-site wells in this area and recently collected direct push data does not show evidence of continued plume migration. Direct push data collected in 1996 (Table 1) and passive diffusion bag (PDB) sampler data collected in 2005 (Table 2) indicate contamination extends to Salt Creek in the east within both the Upper Clay and Upper Sand units but Salt Creek is believed to be a discharge point for local groundwater and, therefore, a barrier to the further spread of contamination within the aquifer. See draft RCRA Facility Investigation Report dated January 17, 2005.

[illegible]

2 “existing area of contaminated groundwater” is an area (with horizontal and vertical dimensions) that has
3 been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and
4 is defined by designated (monitoring) locations proximate to the outer perimeter of “contamination” that
5 can and will be sampled/tested in the future to physically verify that all “contaminated” groundwater
6 remains within this area, and that the further migration of “contaminated” groundwater is not occurring.
7 Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal
8 remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

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_____ If unknown - skip to #8 and enter "IN" status code.

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5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

☒ If yes - skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

☐ If no - (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

☐ If unknown - enter “IN” status code in #8.

Rationale and Reference(s): Vinyl chloride and 1,2 DCE were detected in PDB samplers buried within the bank of Salt Creek at concentrations as high as 77 ug/l and 1500 ug/l, respectively. Salinity levels measured within the aquifer on-site are sufficiently high to effectively preclude on-site groundwater from being used as a drinking water source. Salt Creek is believed to be acting as a barrier to further off-site migration. NSWQ criteria are the applicable standards for judging risk to human health of contaminated groundwater discharges to Salt Creek and all contaminants detected adjacent to and within the streambed of Salt Creek are well below NSWQ criteria (NSWQ standard for vinyl chloride and 1,2 DCE are 5250 ug/l and 140,000 ug/l, respectively.) See Table 2 and draft RCRA Facility Investigation Report dated January 17, 2005.

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment “levels,” as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of “contaminated” groundwater can not be shown to be “**currently acceptable**”) - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter “IN” status code.

Rationale and Reference(s): _____

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

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Rationale and Reference(s): The existing groundwater monitoring system will continue to provide data capable of verifying that the site groundwater contaminant plume remains within its current plume footprint. Specifically, monitoring wells MW-180/MW181, MW-186/MW-143, MW-187/MW-188, MW-125/MW-142, MW-124, MW-146, and MW-177/MW-179 will allow detection of significant contaminant increases along the facility perimeter and potential for further off-site migration. PDB samplers will also be used to monitor for increasing concentrations along Salt Creek.

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8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

☒ **YE** - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **BNSF Hobson Yard** facility, EPA ID # **NED000822767**, located in **Lincoln, Nebraska**. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

☐ **NO** - Unacceptable migration of contaminated groundwater is observed or expected.

☐ **IN** - More information is needed to make a determination.

Completed by (signature) William J. Johnson Date 09/21/05
 (print) **Jeff Johnson**
 (title) **EPA Project Manager**

Supervisor (signature) Don Toensing Date 09/21/05
 (print) **Don Toensing**
 (title) **Chief, RCAP**
 (EPA Region or State) **Region VII**

Locations where References may be found:

EPA Region 7 Records Center.

Contact telephone and e-mail numbers

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